

A REVISION OF THE NEW SUBFAMILY XIPHOZELINAE (HYMENOPTERA, BRACONIDAE)

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With 45 text-figures

ABSTRACT

A new subfamily is erected for the genera *Xiphozele* Cameron, 1906, and *Distilirella* gen. nov. *Distilirella curvinervosa* gen. et spec. nov., from New Guinea, and the species of *Xiphozele* are described and fully illustrated.

INTRODUCTION

In the course of a revision of the Macrocentrinae s.l. I have tried to delimit the subfamily Macrocentrinae with the aid of synapomorphous character-states. One of the genera, which proved to be untenable in the Macrocentrinae because of the lack of synapomorphous character-states is *Xiphozele* Cameron, and a genus with even less apomorphous character-states has now been discovered in New Guinea. The distribution of the Xiphozelinae is restricted to the South East Palaearctic and Oriental regions and New Guinea. There are few specimens of Xiphozelinae in any collection, though they are large, conspicuous insects. Despite this an attempt is made to revise the group. For the scarce literature, see Shenefelt (1969: 174—175) and for the general terminology, see Van Achterberg (1976a: 160—166).

PHYLOGENY

The new subfamily formed by the genera *Xiphozele* Cameron and *Distilirella* gen. nov. possesses the following remarkable apomorphous character-states:

1. A deep and round laterope situated far from the base of the first metasomal tergite (figs. 18, 28). This is a unique character-state, which, as far as I am aware, does not occur in other subfamilies of the Braconidae; there is at most a rather shallow, elliptical laterope far removed from the base of the tergite, e.g., in the genus *Zele* Curtis (nec auct.). The presence of a laterope is itself a plesiomorphous character-state.
2. The strongly inclivous nervellus of the hind wing, which is exceptional in the Braconidae and probably an apomorphous character-state. Only in the genus *Brulleia* Szépligeti does the same condition appear.

3. The short ovipositor, about equal to the apical height of the metasoma (fig. 1). An ovipositor about as long as the fore wing or somewhat shorter is often associated in the Braconidae with other plesiomorphous character-states. Therefore the short ovipositor of the Xiphozelinae is considered to be an apomorphous state.

4. The first recurrent vein is far antefurcal (fig. 9); it is a general tendency in the Braconidae that apical veins retreat towards the base of the wing. Thus an antefurcal recurrent vein is an apomorphous character-state, while *Brulleia* with its postfurcal first recurrent vein shows the plesiomorphous condition.

5. The presence of an "ophionoid facies" (Gauld & Huddleston, 1976), most pronounced in the yellowish body colour, and the large ocelli and eyes, which are an adaptation to the nocturnal activity of the parasites. This is probably induced by the nocturnal activity of the caterpillars (Noctuidae!) wherein the egg is deposited.

6. The absence of the dorsal carinae and the medio-basal depression of the first metasomal tergite (fig. 8). As shown by several groups of Braconidae with many other plesiomorphous character-states (e.g., Doryctinae, Helconinae), the presence of at least short basal dorsal carinae and of a medio-basal depression has to be considered to represent a plesiomorphous character-state.

7. The spiracle is situated far from the base of the first tergite. This is a general tendency in the Braconidae (Van Achterberg, 1976b: 36); instead of subbasal spiracles (the plesiomorphous condition) the spiracles are situated more or less submedially because of the petiolation of the first tergite. The slender posterior half of the first tergite (fig. 19) in the Xiphozelinae is also unusual.

8. The reduction of the occipital carina. This carina is present in many not closely related groups of Hymenoptera which show many other plesiomorphous character-states.

9. The presence of the lateral carina of the mesoscutum. A well-developed lateral carina seems to be a late development in the history of the Braconidae.

10. The claws possess a more or less developed ventral lamella (figs. 16, 35). As pointed out by Brothers (1975: 521) simple bifurcate claws (without a lamella) have to be considered a plesiomorphous character-state in the Hymenoptera.

11. The long palpi; length of maxillary palp 1.8—2.3 times height of head. The plesiomorphous condition of the maxillary palp in the Braconidae is a length about equal to the height of the head.

The plesiomorphous character-states of the Xiphozelinae are:

1. The presence of the first transverse anal, the transverse anellan and the transverse radiellan veins. These veins are weakly developed, but they indicate a more complex (and plesiomorphous state of) venation. The same applies to the presence of the second transverse cubital vein and the long radial vein of the fore wing.

2. The presence of a laterope. In the Ichneumonoidea it is most likely an early development and should therefore be considered a plesiomorphous character-state within the Braconidae. It is common in not closely related groups, which show several other plesiomorphous character-states.

3. The large plical (anal) lobe of the hind wing. A well-developed plical lobe

such as present in the Symphyta is a plesiomorphous character-state.

4. The metasomal tergites are equally setose. The reduction of the setosity is a common (apomorphous) condition, but it has not taken place in the Xiphozelinae.

5. The fore tibial spur is rather slender, more or less cylindrical and bears a narrow flange on the inner side. This is the common plesiomorphous character-state in the Hymenoptera-Apocrita.

6. The presence of the prepectal and hypostomal carinae. The presence of these carinae is generally accepted to be a plesiomorphous character-state. The carinae are present in many not closely related groups of Hymenoptera which have many other plesiomorphous character-states in common.

7. The maxillary and labial palpi consist of 6 and 4 segments, respectively, and are well-developed. There is a general tendency for reduction of the palpi (Van Achterberg, 1976b: 35), but in the Xiphozelinae the plesiomorphous character-state still occurs.

8. The first discoidal cell is shortly petiolate. A petiolate first discoidal cell is generally considered to be a plesiomorphous character-state in the Hymenoptera.

More doubtful character-states are:

1. The metasoma is inserted above the hind coxae. Probably this character-state is plesiomorphous, if it is not inserted extremely high as in the Cenocoeliinae and the Evanoidea. A medially inserted metasoma occurs in several subfamilies of Braconidae which are not closely related (e.g., Helconinae, Macrocentrinae, Orgilinae, Amicrocentrinae, Agathidinae, and Xiphozelinae) as well as in the Ichneumonidae (subfamily Labeninae (= Labiinae sensu Townes)).

2. The radiellan cell of the hind wing is more or less widened apicad (figs. 25, 37). Probably (if in a rather moderate manner) this is a plesiomorphous condition.

Less easy to answer is the question of the relationships of the Xiphozelinae. Their inclusion in the Macrocentrinae as done by most previous authors is untenable because of the synapomorphous character-states. The Macrocentrinae have the following synapomorphous character-states: 1—trochantelli apically toothed; 2—plical lobe rather narrow; 3—occipital carina completely absent; 4—claws simple or with a lamella; 5—first recurrent vein far antefurcal. Most of these character-states are absent or at least are not completely present in the Xiphozelinae. The unique apomorphous character-state of the Macrocentrinae, viz., the apically toothed trochantelli, is absent in the Xiphozelinae. The other characters show more or less a tendency to follow the developments in the Xiphozelinae, but the Xiphozelinae have in the round and deep laterope, which is situated far posteriorly, and the strongly inclivous nervellus their own apomorphous character-states not shared by the Macrocentrinae. Of the other apomorphous character-states of the Xiphozelinae the short ovipositor, the ophionoid facies, the reduction of the dorsal carinae and medio-basal depression of the first tergite, and more posteriorly situated spiracle of the first tergite are independently evolved in the Macrocentrinae, because the plesiomorphous condition is common in the Macrocentrinae. The development of the lateral carinae of the mesoscutum, the reduction of the occipital carina and the far antefurcal first recurrent vein may indicate the same origin, but this conclusion is

uncertain because they are general tendencies in the Braconidae. The plesiomorphous character-states not present in the Macrocentrinae are the presence of the transverse anellan and radiellan veins and the large plical lobe of the hind wing.

A candidate for the sister-group of the Xiphobelinae is formed by the Helconinae s.l., because of the genus *Brulleia* Szépligeti. *Brulleia* has also a large plical lobe, an apically dilated radiellan cell, a short second abscissa of the subcostella and an inclivous nervellus. But only the latter is a probable apomorphous character-state, while *Brulleia* has the first discoidal cell widely sessile, maxillary and labial palpi 5 and 3 segmented, respectively, and the transverse radiellan and anellan veins absent. Besides these apomorphous character-states, it has the second transverse anal vein present, the first recurrent vein postfurcal and a complete occipital carina, which are plesiomorphous character-states not present in the Xiphobelinae.

In summary: the position of the Xiphobelinae is uncertain, they are not closely related to the Macrocentrinae s.s. as suggested by other authors. There may be a relationship with the Helconinae s.l., to which they are more closely related than are the Amicrocentrinae.

BIOLOGY

Only in the case of *Xiphozelus compressiventris* Cameron is something known about the biology. I have examined two females from South India (Karwar, Karnataka, 14.viii.1907, F. R. Bell (BM)), which were reared from the "pupa" (probably cocoon) of *Ophiusa simillima* Guenée (Lepidoptera: Noctuidae). Watanabe (1969: 327) reported a female bred from a lepidopterous larva feeding on leaves of *Quercus* spec. at Sapporo. The host species seems to belong to the Noctuidae. The parasite-larva left its host on September 7, 1966, and spun a cocoon within which it passed the winter. The adult emerged from the cocoon on March 23, 1967. The dates of capture of the 6 specimens from Japan are between 25.iii and 28.viii. The cocoon is 12–13 mm long, spindle-shaped, thick, dark brown, and somewhat woolly. Because Noctuid larvae are usually active nocturnally, it is likely that this induces the nocturnal activity of the adult parasites.

XIPHOZELINAE subfam. nov.

Diagnosis. — Length of body 12.5–20.0, of fore wing 10.5–16.6 mm; antennal segments of ♀ 53–56, of ♂ 51–54; pedicellus short, transverse and cylindrical (figs. 1, 28); maxillary and labial palpi long, slender, 6- and 4-segmented, respectively; apical segment of antenna with a long spine apically (fig. 2); ocelli large (figs. 12, 24); anterior tentorial pits large, deep (fig. 10); epistomal suture complete; occipital carina absent dorsally; eye bare; apical margin of clypeus thin and differentiated from clypeus (figs. 22, 40); labrum visible frontally; occipital flange narrowly developed; hypostomal carina present (fig. 7); mandible strongly twisted, both its teeth sharp apically and second tooth much shorter than first

tooth (figs. 7, 40); pronope and antescutal depression absent; pronotum convex dorsally and with an upwardly directed lamella anteriorly; propleural lamellae developed (fig. 1); dorso-apical corner of pronotum rounded and more or less protruding posteriad (figs. 18, 28); tegulae almost reaching anterior margin of mesopleuron (fig. 1); mesopleuron slightly protruding anteriorly (fig. 18); lateral carina of mesoscutum present in front of tegulae; lateral and middle lobes of mesoscutum equally convex; prepectal carina strongly developed (figs. 1, 28); precoxal suture rather impressed (fig. 18); metapleural flange or lamella large, and sharp apically (figs. 18, 28); dorsal surface of propodeum not differentiated from its posterior surface (fig. 28); propodeum without areola and tubercles; propodeal spiracle large, more or less elliptical (figs. 18, 28); antepropodeal depression rather wide and deep (fig. 39); notaui present; mesoscutal lobes rather convex; scutellar suture wide, long, deep and with one longitudinal carina (figs. 26, 43); scutellum sculptured posteriorly (figs. 6, 26, 43); metanotum rather flat postero-medially (figs. 18, 26); first discoidal cell shortly petiolate and sharp anteriorly (fig. 9); cuqu 2 present; r 3 more or less curved towards metacarp (figs. 25, 37); nervulus interstitial or nearly so (figs. 9, 37); n. rec. far antefurcal; sides of B 1 parallel or nearly so (figs. 9, 37); CU 1 larger than CU 2; nervellus very long, inclivous and posteriorly curved basad (fig. 25); B 1 closed apically, s 1b present; fringes of wings short; parastigma large (fig. 37); intercostal cell absent; aqu 1 and aqu' present as weakly pigmented stripes (fig. 25); aqu 2 absent; metacarp ends near apex of radial cell (fig. 9); plical lobe very large and normally setose (fig. 37); radiellian cell widened apicad after the completely developed rqu' (figs. 25, 37); base of radiella as sclerotized as basella; basella and second abscissa of subcostella short (fig. 9); discoidella absent, but exceptionally a remnant is present (fig. 38); legs slender, length of hind tibia ca. 1.3 times its femur; length of femur and tibia of hind leg 9.0—10.1 and 11.8—15.0 times their width, respectively; hind tibial spurs long, straight, setose and sharp apically; inner hind tibial spur 0.6—0.7 times its basitarsus; hind basitarsus without a ventral row of setae; tarsal claws of ♀ with a ventral lamella (figs. 15, 34); shape of inner hind claw equal to its outer claw; fore tibial spur rather slender, more or less cylindrical and with a narrow flange or lamella (figs. 20, 21); trochantelli without teeth, simple apically; apex of hind tibia bristly (fig. 31) or with slender pegs (fig. 11); metasoma inserted medially between dorsal surface of propodeum and the dorsal level of base of hind coxae (figs. 1, 18); length of first metasomal tergite 5.5—6.4 times its apical width; sides of first tergite (sub-)parallel; first tergite flat or convex medio-basally; dorsal carinae of first tergite absent (fig. 39); laterope deep, round and large, at basal third of first tergite, just in front of spiracle and far removed from the base of the tergite (figs. 18, 19); dorsope absent; metasoma evenly setose; second tergite smooth as following tergites, with a weakly developed lateral crease (fig. 28); metasoma strongly compressed apicad (fig. 19); ovipositor straight and with a shallow subapical notch (figs. 1, 28); length of ovipositor sheath 0.05—0.07 times fore wing; hypopygium large and truncate apically (fig. 28).

Distribution. — South East Palaearctic and Oriental regions and New Guinea.

Key to genera of the Xiphzelinae

1. Prepectal carina reaches anterior margin of mesopleuron (fig. 1); occipital carina far removed from hypostomal carina ventrally (fig. 7); basella of hind wing straight (fig. 5); nervulus abruptly bent distad and with a sclerome (figs. 17, 27); scutellum without a lateral carina (fig. 26); tarsal claws of ♀ with only one narrow submedial lamella (fig. 15) *Xiphozele* Cameron
- Prepectal carina remains far removed from the anterior margin of mesopleuron (fig. 28); occipital carina reaching hypostomal carina ventrally (fig. 32); basella strongly curved (fig. 45); nervulus straight (fig. 33), without a sclerome; scutellum with a lateral carina (fig. 43); tarsal claws of ♀ with two lamellae, the 2nd lamella subapically attached to the submedial lamella (fig. 35) *Distilirella* gen. nov.

Xiphozele Cameron (figs. 1—27)

Cameron, 1906, Entomologist 39: 204.

Enderlein, (1918) 1920, Arch. Naturgesch. 84A (11): 219 (*Cerotopia*).

Shenefelt, 1969, Hym. Cat. (nov. ed.) 4(1): 174—175.

Watanabe, 1969, Proc. ent. Soc. Wash. 71(3): 325—327, figs. 8—9.

Sharma, 1975, Oriental Ins. 9(2): 173—175, figs. 1—5.

Type-species: *Xiphozele compressiventris* Cameron

Diagnosis. — Apex of scapus rather roundly emarginated (fig. 18); occipital carina far removed from hypostomal carina (fig. 7); eyes not (fig. 22) or scarcely visibly emarginated at inner side (fig. 10); teeth of mandible robust (fig. 10); apical margin of clypeus more (fig. 22) or less (fig. 10) emarginated; prepectal carina reaches anterior margin of mesopleuron (figs. 1, 18); episternal scrobe absent or nearly so (fig. 18); scutellum without a lateral carina (fig. 26), widely sculptured posteriorly (figs. 6, 26); cu 1 straight or nearly so (fig. 9); nervulus abruptly bent distad, much narrower than surrounding veins, interstitial with basal vein and with a sclerome (figs. 17, 27); SM more (fig. 17) or less (fig. 27) bare apically; basella straight; metacarpella weakly curved or rather straight (figs. 5, 25), exceptionally strongly curved (fig. 9 in Watanabe, 1969); tarsal claws of ♀ setose and with a submedial lamella (figs. 15, 16); tarsal claws of ♂ with a large, somewhat inward directed and apically sharp lamella (figs. 13, 14); laterope deep (fig. 8) or very deep (fig. 19), more or less removed from each other; ovipositor sheath stout (fig. 1), but unknown of *burmensis*.

Distribution. — Australian (New Guinea), Oriental and South East Palaearctic: two species.

Note. — Apomorphic character-states of *Xiphozele* are: 1—nervulus abruptly bent distad; 2—SM more or less bare; 3—sclerome present in fore wing; 4—claws with a ventral lamella; 5—occipital carina absent ventrally; 6—ovipositor sheath stout; 7—prepectal carina present antero-dorsally, reaching anterior edge of mesopleuron. Plesiomorphous character-states are: 1—basella straight; 2—metacarpella weakly curved or almost straight; 3—scutellum without a lateral carina.

Key to species of *Xiphozele* Cameron

1. Mesoscutal lobes brownish yellow; wing membrane hyaline; vertex punctulate or smooth (fig. 12); clypeal margin weakly concave medially (fig. 10); submedial cell mainly bare (fig. 17), exceptionally with ca. 30 setae *compressiventris* Cameron
- Mesoscutal lobes mainly dark brown; wing membrane more or less brownish; vertex punctate (fig. 24); clypeal margin rather deeply concave medially (fig. 22); submedial cell mainly sparsely setose (fig. 27), usually with at least ca. 30 setae *burmensis* Sharma

***Xiphozele compressiventris* Cameron (figs. 1—17)**

Cameron, 1906, Entomologist 39: 205.

Enderlein, (1918) 1920, Arch. Naturgesch. 89 A(11): 220, fig. 11 (*Cerotopia corneimacula*).

Shenefelt, 1969, Hym. Cat. (nov. ed.) 4(1): 174—175.

Watanabe, 1969, Proc. ent. Soc. Wash. 71(3): 325—327, figs. 8, 9.

Sharma, 1975, Oriental Ins. 9(2): 173, 175.

Redescribed after a ♀ from Sri Lanka, compared with holotype. Length of body 15.0, of fore wing 11.5 mm.

Head. — Antennal segments 53, length of 3rd segment 1.3 times 4th segment, length of 3rd and 4th segments 4.0 and 3.2 times their width, respectively, penultimate segments 2.3 and 3.0 times their width, respectively, and apical segment with a long spine (fig. 2); length of maxillary palp 2.2 times height of head; dorsal length of eye 3.6 times temple; temple roundly receding (fig. 12); POL : Ø ocellus : OOL = 10 : 9 : 3; frons almost flat and smooth; vertex mainly smooth; occipital carina absent, except for a lateral remnant at middle level of eyes (fig. 7, in all other specimens examined there is at least a vague remnant present); face convex, punctulate, shiny, but coriaceous near the medial convexity; clypeus strongly convex, punctulate; apical margin of clypeus weakly concave (fig. 10); length of malar space 0.6 times basal width of mandible; malar suture weakly developed (fig. 10).

Mesosoma. — Length of mesosoma 1.4 times its height; side of pronotum smooth, but medially and posteriorly somewhat crenulate and weakly striate below the deep antero-dorsal depression (fig. 1); epicnemial area mainly weakly punctate; precoxal suture coarsely reticulate-punctate and its surroundings weakly punctate; pleural suture densely and narrowly crenulate, rather shallow and narrow (fig. 1); metapleuron coarsely reticulate; notauli distinctly impressed, but smooth (fig. 6); mesoscutal lobes indistinctly punctulate-coriaceous; side of scutellum remotely crenulate; metanotum with one medial carina and a pair of parallel carinae sublaterally (fig. 6); surface of propodeum rather finely and closely reticulate, but anteriorly and posteriorly narrowly smooth, without a medial carina, except for a weakly developed short part anteriorly.

Wings. — $r_1 : r_2 : r_3 = 16 : 20 : 52$; cuqu 1 : r2: cuqu 2 = 17 : 20 : 12, r3 curved anteriad; metacarpella curved (fig. 5, in some other specimens rather strongly);

SM with ca. 10 setae (in other specimens exceptionally as many as ca. 30 setae).

Legs. — Hind coxa punctulate; length of femur, tibia and basitarsus of hind leg 9.0, 11.8 and 10.6 times their width, respectively; length of hind tibial spurs 0.7 and 0.6 times their basitarsus.

Metasoma. — Length of 1st tergite 6.0 times its apical width, its surface mainly smooth (fig. 8), but weakly transversely aciculate medially and weakly punctate posteriorly; base of 1st tergite tube-shaped and with a pair of short ventral carinae (fig. 1); whole 1st tergite convex, but basally weakly, and its spiracles not protruding; length of ovipositor sheath 0.05 times fore wing.

Colour. — Brownish yellow; tips of mandibles, direct surroundings of ocelli, wing veins mainly, more or less dark brown; apical half of metasoma somewhat infuscated; base of 1st tergite, tibiae and tarsi rather whitish yellow; wing membrane hyaline.

Holotype (only type-specimen) in BM; type-locality: Sikkim; no. 3.c.683. According to Mr. T. Huddleston (in litt.), who was kind enough to examine the type, this specimen has the submedial cell bare except for about 20 setae and the mesoscutum is entirely without any dark brown coloration. The specimen figured and redescribed is from Kandy: "E. Comber, Feb.'10, Kandy (Sri Lanka)", "1910/255", "*Cerotopia corneimaculata* End., G. Nixon, det 1948" (BM). Additionally, 10 ♀ and 2 ♂ have been examined from New Guinea (Humboldt Bay District, Bewani Mts.), Indonesia (Sumatra, Sukaranda, type of *Cerotopia corneimacula* Enderlein), Sarawak (Kuching, at night, in house), Sri Lanka (Kandy, 2000 ft.), India (Karwar, Karnataka, S. India, ex *Ophiusa simillima* Guenée), China (Kouy Tcheou, Se Tchouen), Taiwan (Sunmoon Lake) and Japan (Wakayama; Hayatuki, Toyama, Honsyu) (BM, EI, TC, USNM, MNHN, PAN, RMNH). Variation: antennal segments of ♀ 56 (1 specimen), of ♂ 51 or 53 (2 specimens), length of ovipositor sheath 0.05 times fore wing; length of fore wing 10.5—16.6, of body 14.2—20.0 mm; length of 1st tergite 5.8—6.0 times its apical width; length of metasoma 2.5—2.6 times length of metasoma.

Xiphozele burmensis Sharma (figs. 18—27)

Sharma, 1975, Oriental Ins. 9(2): 173—175, figs. 1—5.

Holotype, ♀ (according to the original description, but apical part of metasoma and all claws lost), length of body (without apical half of metasoma): 12.0, of fore wing 13.6 mm.

Head. — Remnant of antenna consists of 8 segments (antennal segments of paratype 50, of ♂ from China 55), length of 3rd segment 1.2 times 4th segment, length of 3rd and 4th segments 4.1 and 3.3 times their width, respectively, penultimate segments absent but in ♂ from China 2.0 and 1.6 times their width and apical segment with a long spine; length of maxillary palp 1.8 times height of head; dorsal length of eye 2.8 times temple; temple rounded behind (fig. 24); POL : ♂ ocellus : OOL = 28 : 13 : 15; frons mainly flat, smooth; occipital carina absent, but dorso-laterally a weakly developed and short remnant is present (as in both other specimens examined); vertex punctate (fig. 24); face convex, punctate, with a

short medio-dorsal ridge (fig. 22); clypeus strongly convex, densely punctate; length of malar space 0.6 times basal width of mandible; malar suture absent.

Mesosoma. — Length of mesosoma 1.2 times its height; side of pronotum smooth dorsally, rugulose with some crenulae ventrally, and medially depressed, with some crenulae (fig. 18); epicnemial area punctate and somewhat rugose; precoxal suture coarsely rugose-reticulate; pleural suture indistinctly crenulate, narrow, ventrally smooth except for some crenulae (fig. 18); metapleuron reticulate-carinate; notauli only in posterior half distinctly impressed and crenulate, anteriorly only rugulose (fig. 26); mesoscutal lobes punctulate; side of scutellum somewhat indistinctly rugose; metanotum with 3 carinae medially and a pair of submedial carinae (fig. 26); surface of propodeum coarsely transversely reticulate-rugose, with a short carina anteriorly, situated in a weak depression.

Wings. — $r\ 1 : r\ 2 : r\ 3 = 29 : 49 : 139$; cuqu 1 : r 2 : cuqu 2 = 38 : 49 : 26; $r\ 3$ weakly curved towards metacarp; metacarpella rather straight, weakly curved (fig. 25); SM with ca. 80 setae.

Legs. — Hind coxa weakly and remotely punctate; all tarsal claws absent; length of femur, tibia and basitarsus of hind leg 10.1, 12.8 and 11.0 times their width, respectively; length of spurs of hind tibia 0.6 and 0.5 times their basitarsus.

Metasoma. — Length of 1st tergite 5.5 times its apical width, its surface mainly smooth in front of spiracle, behind spiracle rugose and with a medial crest-shaped carina (fig. 19); whole 1st tergite distinctly convex; spiracles weakly protruding; shape and length of ovipositor sheath unknown.

Colour. — Brownish yellow; tips of mandibles, apices of medial antennal segments (of paratype), stemmaticum and its surroundings, wing veins and mesoscutal lobes mainly, more or less dark brown; hind tarsus whitish yellow; wing membrane somewhat brownish, more pronounced near sclerome (fig. 27).

Holotype in NR: "N. E. Burma, Kambaiti, 2000 m, 19/5, 1934, Malaise", "Riksmuseum Stockholm", "Holotype *Xiphozele burmensis* V. Sharma, 1974". One paratype: topotypic, NR, metasoma absent, length of fore wing 14.4 mm, SM with ca. 30 setae, vertex coarsely punctate, colour as holotype, $POL : \emptyset : OOL = 12 : 10 : 5$, claws with a ventral lamella, somewhat more developed than in ♀ of *compressiventris* (fig. 16). Additionally examined 2 ♂ from China: "Suifu, SZ., China, VI. 1—21, 1928, alt. 1000—1500, D. C. Graham Coll." (USNM); tarsal lamella enlarged in respect to the lamella of ♀, about equally shaped as lamella of ♂ of *compressiventris* (fig. 13); length of metasoma 2.7 times length of mesosoma; length of fore wing 13.8, of body 17.6 mm; metasoma infuscated apically, further equally coloured as holotype; SM densely setose. Second male is from Shanghai (1898, J. de Joannis, MNHN) with wings only weakly infuscate, SM with 24 setae, clypeus less concave than in type, length of fore wing 12.1 mm and of body 16.1 mm.

Note. — *X. burmensis* is closely related to *compressiventris* and is rather variable. The characters given by Sharma (1975: 175) are not suitable for separation of the two species. Firstly because she confuses Cameron's meaning of the term "metanotum" (= propodeum) with the modern meaning of this term. Secondly the length of the metasoma in respect to the mesosoma is variable; the male of

burmensis from China has a comparatively longer metasoma (2.7 times mesosoma) even than several specimens of *compressiventris* (2.5—2.6 times). Finally the differences in length of the body of parasites are usually unsuitable for species separation, as proven again by the small series examined for this revision.

Distilirella gen. nov. (figs. 28—45)

Etymology: from “distantia” (Latin for “remoteness”) and “lirella” (Latin for a “small ridge”), because the prepectal carina is remote from the anterior edge of the mesopleuron. Gender: feminine.

Type-species: *Distilirella curvinervosa* spec. nov.

Diagnosis. — Apex of scapus slightly inclivous (fig. 28); occipital carina reaching hypostomal carina ventrally, far above mandibular base (fig. 32); eyes not emarginated, at most with a scarcely visible bend on the inner sides (fig. 40); teeth of mandible rather slender (fig. 40); apical margin of clypeus straight medially; prepectal carina remains far removed from anterior margin of mesopleuron (fig. 28); episternal scrobe deep and rather round (fig. 28); scutellum with a curved lateral carina, which is absent posteriorly (fig. 43); scutellum narrowly sculptured posteriorly (fig. 43); cu 1 weakly sinuate (fig. 37); nervulus straight, only slightly narrower than surrounding veins, slightly postfurcal and without a sclerome (fig. 33); SM setose, but in basal half less densely setose than in apical half; basella and metacarpella strongly curved (fig. 45); tarsal claws of ♀ indistinctly yellowish, pectinate and with a submedial lamella at which another subapical lobe is situated (figs. 34, 35); tarsal claws of ♂ bifurcate, without lamella (figs. 41, 42); laterope very deep, almost touching each other (fig. 39); ovipositor sheath rather slender, its sides subparallel (fig. 28).

Distribution. — Australian (New Guinea): one species.

Note. Apomorphic character-states of *Distilirella* are: 1—basella and metacarpella strongly curved; 2—tarsal claws of ♀ with double lamellae; 3—scutellum with a lateral carina. Additional plesiomorphous character-states are: 1—nervulus straight and equally developed; 2—SM setose; 3—sclerome of fore wing absent; 4—claws of ♂ bifurcate; 5—ventral half of occipital carina present; 6—ovipositor sheath slender; 7—prepectal carina remains far removed from anterior margin of mesopleuron.

Distilirella curvinervosa spec. nov. (figs. 28—45)

Holotype, ♀, length of body 12.5, of fore wing 11.7 mm.

Head. — Antennal segments 47 (but apical segments absent), length of 3rd segment 1.3 times 4th segment; length of 3rd and 4th segments 5.1 and 4.0 times their width, respectively, and both penultimate segments absent (in allotype they are 2.3 and 3.0 times their width and apical segment with a long spine (fig. 36)); length of maxillary palp 2.3 times height of head; dorsal length of eye 3.4 times temple; temple roundly receding and punctulate (fig. 44); POL : Ø ocellus : OOL = 9 : 8 : 8; frons weakly concave and smooth; ventral half of occipital carina completely present, reaching middle level of eye (fig. 32); face punctulate, weakly

convex and with a small tubercle dorso-medially (fig. 40); clypeus convex, punctulate; length of malar space 0.7 times basal width of mandible; malar suture almost absent (fig. 40).

Mesosoma. — Length of mesosoma 1.4 times its height; side of pronotum deeply depressed medio-anteriorly and remotely crenulate (fig. 28), its remaining part mainly smooth; epicnemial area smooth, except for some crenulae; precoxal suture with some spaced punctures, its surroundings indistinctly punctulate; pleural suture narrowly crenulate, rather shallow and narrow; metapleuron rugose-reticulate, but dorsally mainly smooth; notauli rather shallow, completely and narrowly crenulate (fig. 43); mesoscutal lobes weakly punctulate; side of scutellum smooth; metanotum with 2 parallel carinae submedially (fig. 43); surface of propodeum mainly smooth between the carinae, with a long medial carina anteriorly (fig. 39) and posteriorly with several more or less transverse carinae, bordered by a carina latero-posteriorly.

Wings. — $r_1 : r_2 : r_3 = 17 : 20 : 60$; $d_1 : d_2 = 1 : 35$; $cu_1 : r_2 : cu_2 = 13 : 20 : 12$; r_3 strongly curved anteriad; radiella weakly curved basally (fig. 37).

Legs. — Hind coxa punctulate; length of femur, tibia and basitarsus of hind leg 9.9, 15.0 and 15.6 times their width, respectively; length of hind tibial spurs 0.6 and 0.5 times their basitarsus.

Metasoma. — Length of 1st tergite 6.4 times its apical width, its surface smooth, flat in front of spiracles and convex behind spiracles; spiracles of 1st tergite slightly protruding; length of ovipositor sheath 0.07 times fore wing.

Colour. — Brownish yellow; stemmaticum, ovipositor sheath and most wing veins dark brown; flagellum and outer aspect of scapus infuscated; hind tarsus whitish yellow.

Holotype in TC: "Wau, N. Guinea, October, 1969, P. Shanahan".

Paratype: 1 ♂ (allotype, RMNH): "Museum Leiden, Nieuw Guinea Exp., K.N.A.G. 1939, Arabeobivak, 6.XI.1939". Antennal segments of allotype 54; frons with some microsculpture laterally; nervellus with a short ramellus (d'), resulting in a posteriorly broken nervellus (fig. 38), in left wing less developed than in right wing; length of fore wing 11.8 mm, length of 1st tergite 6.1 times its apical width.

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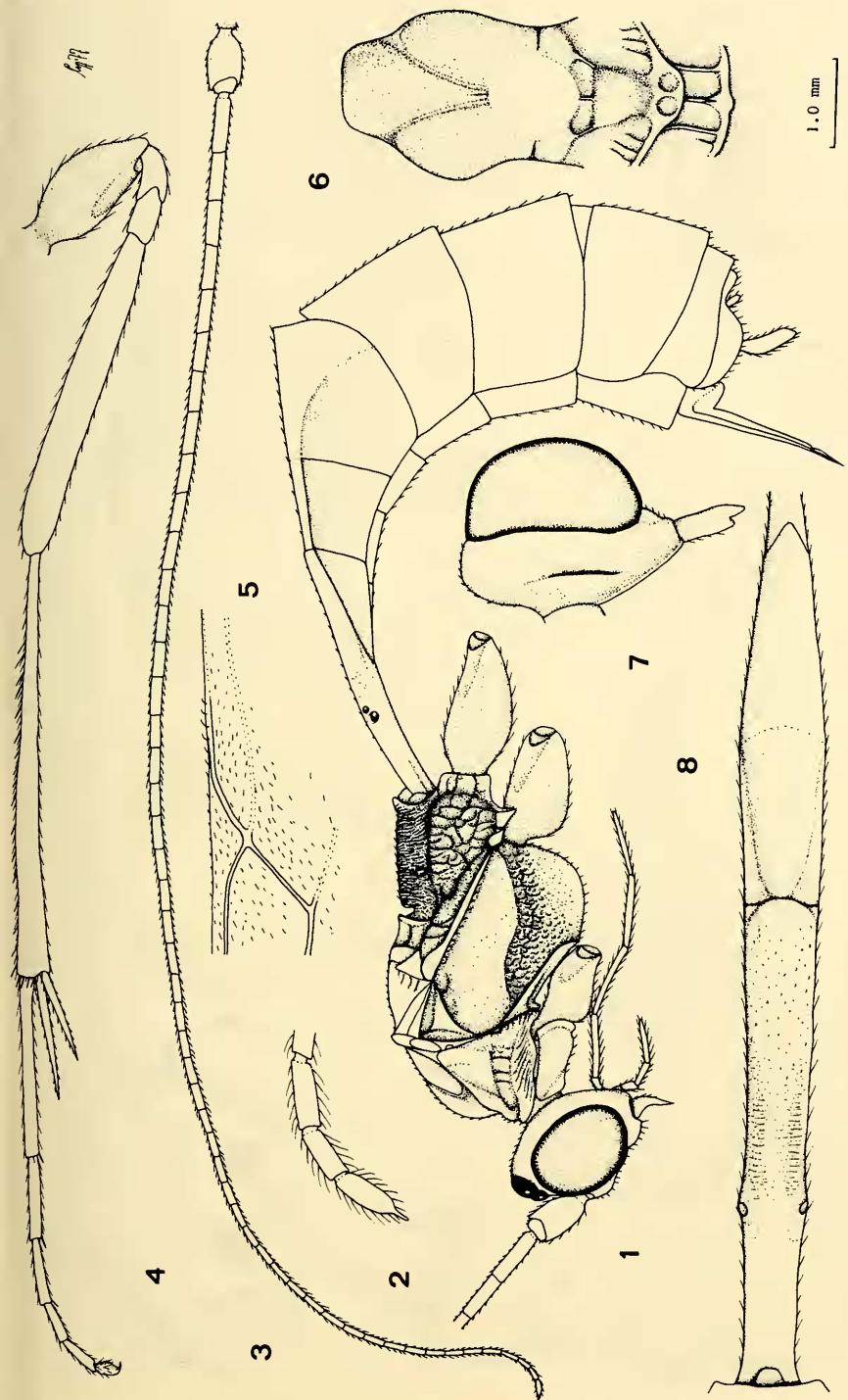
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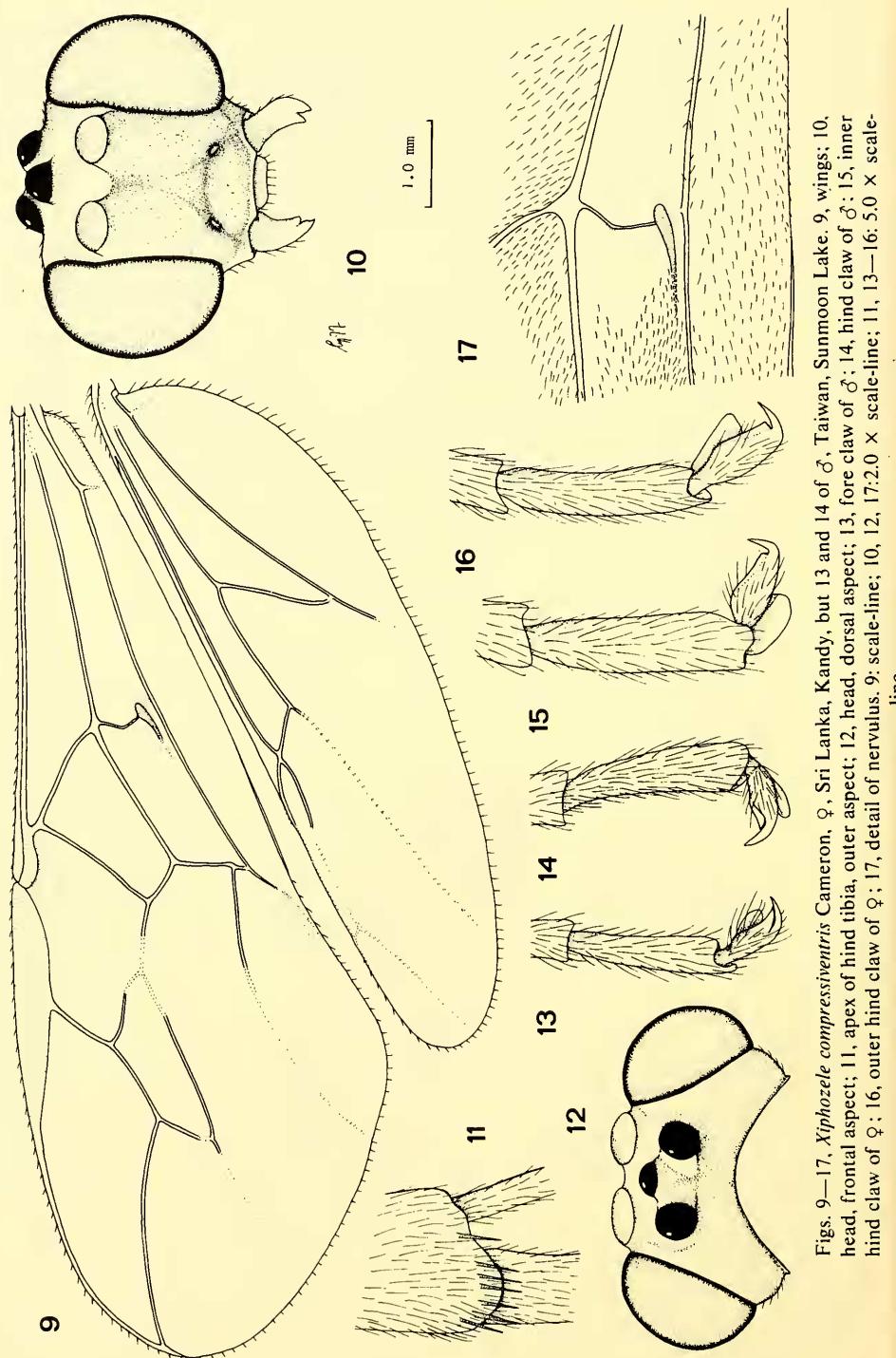
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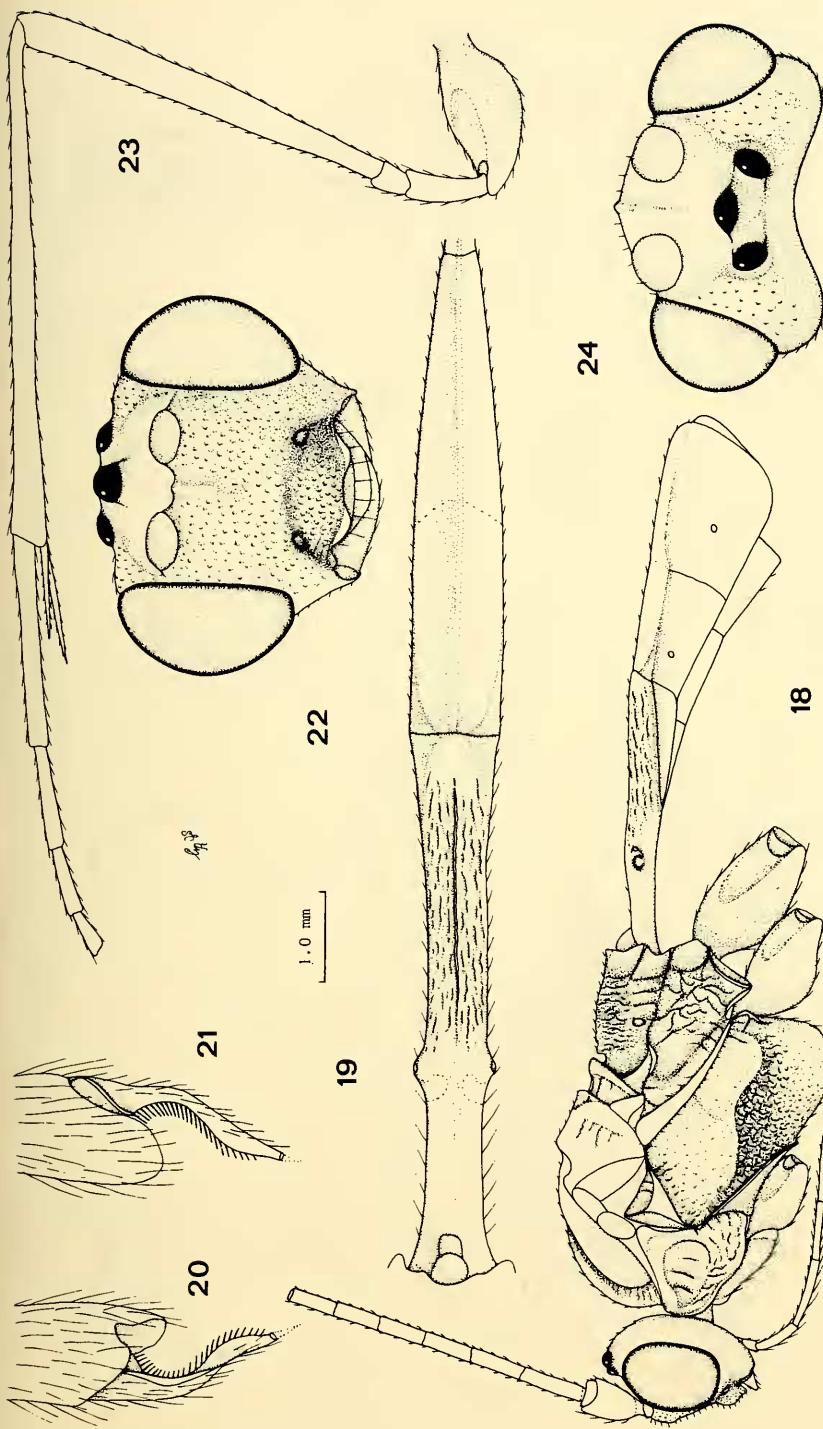
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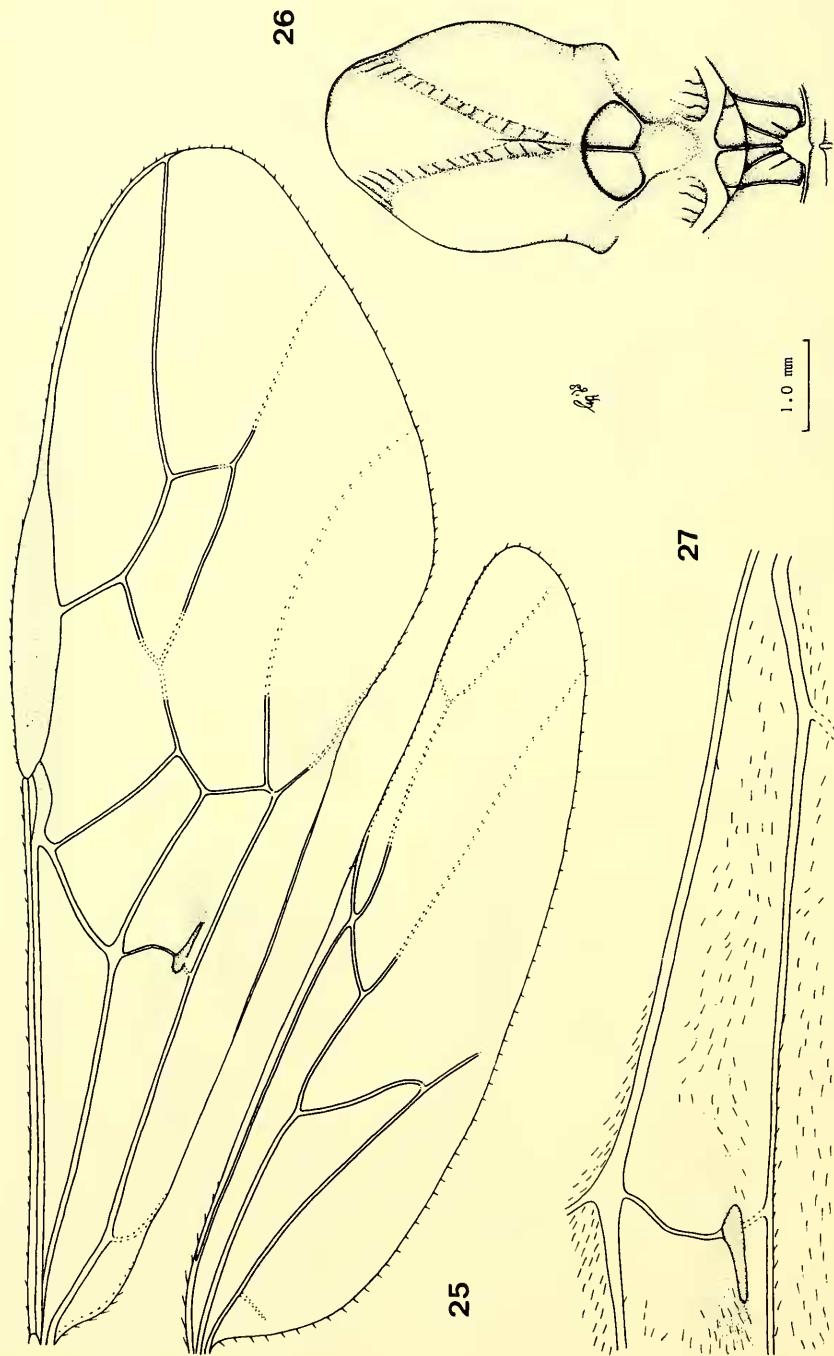
Figs. 1-8. *Xiphozelus compressiventris* Cameron, ♀, Sri Lanka, Kandy. 1, habitus, lateral aspect; 2, apical segments of antenna; 3, antenna; 4, hind leg; 5, detail of basella and metacarpella; 6, mesonotum, dorsal aspect; 7, temple, latero-posterior aspect; 8, 1st-3rd metasomal tergites, dorsal aspect. 1, 3, 4: scale-line; 2: 5.0 × scale-line; 5-8: 2.0 × scale-line.



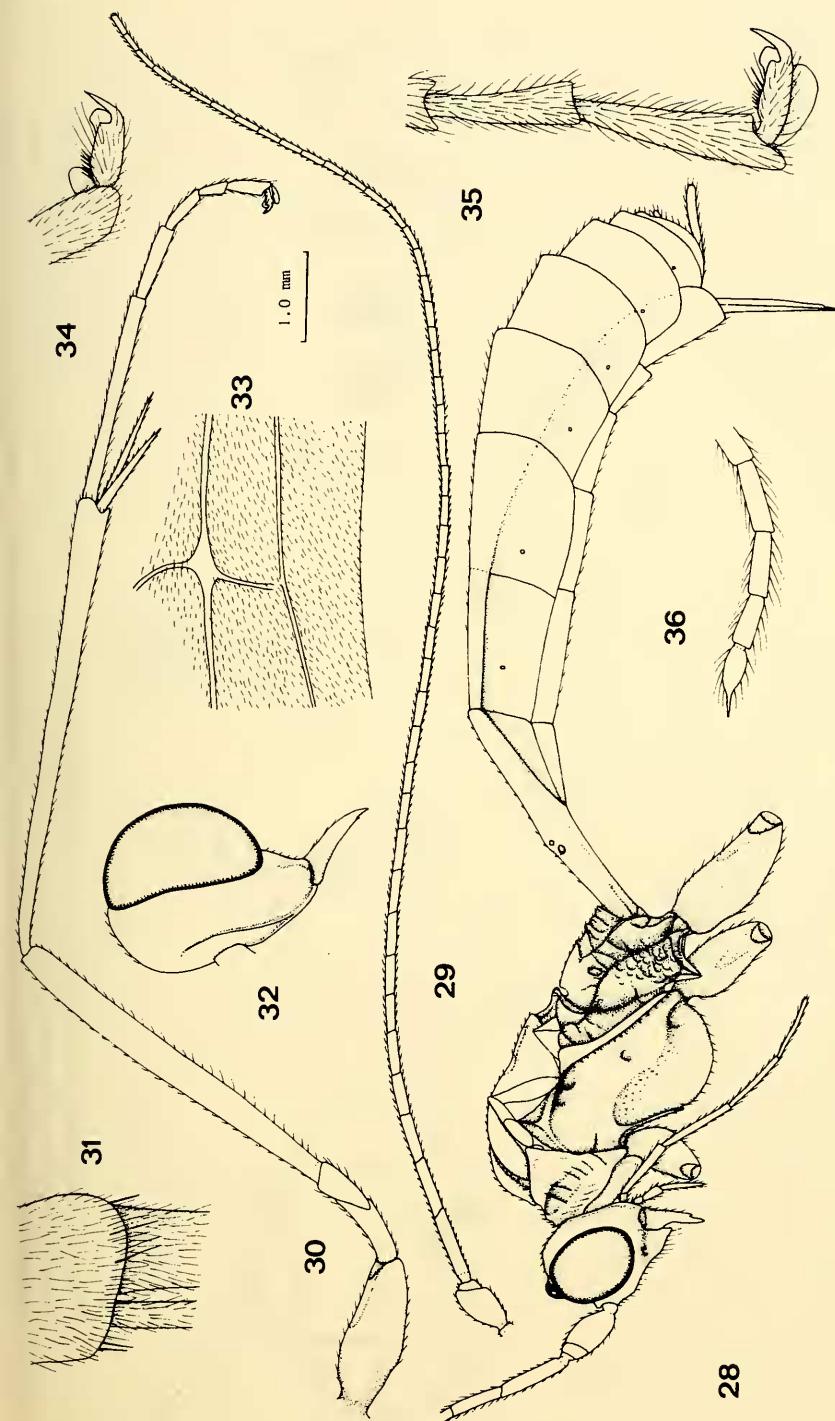
Figs. 9—17, *Xiphozelus compressiventris* Cameron, ♀, Sri Lanka, Kandy, but 13 and 14 of ♂, Taiwan, Sunmoon Lake. 9, wings; 10, head, frontal aspect; 11, apex of hind tibia, outer aspect; 12, head, dorsal aspect; 13, fore claw of ♂; 14, hind claw of ♂; 15, inner hind claw of ♀; 16, outer hind claw of ♀; 17, detail of nervulus. 9: scale-line; 10, 12, 17: 2.0 × scale-line; 11, 13—16: 5.0 × scale-line.



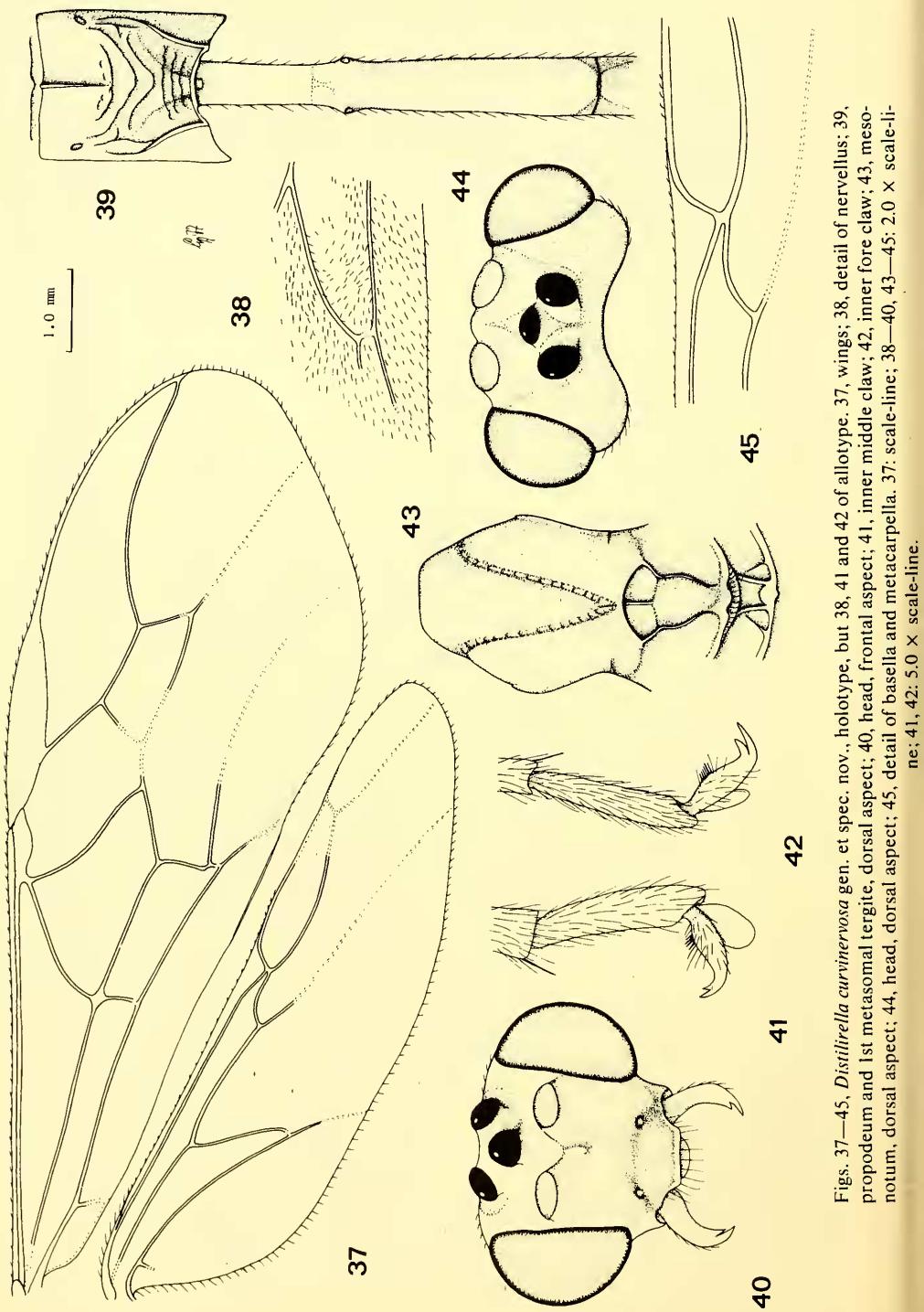
Figs. 18-24. *Xiphozele burmensis* Sharma, holotype. 18, habitus, lateral aspect; 19, 1st-3rd metasomal segments, dorsal aspect; 20, fore tibial spur, outer aspect; 21, id., inner aspect; 22, head, frontal aspect; 23, hind leg; 24, head, dorsal aspect. 18, 23: scale-line; 19, 22, 24: 2.0 × scale-line; 20, 21: 5.0 × scale-line.



Figs. 25—27, *Xiphozelus burmensis* Sharma, holotype. 25, wing; 26, mesonotum, dorsal aspect; 27, detail of SM. 25; scale-line: 26, 2.0 \times scale-line. 27: 2.0 \times scale-line.



Figs. 28—36. *Dixillirella curvivora* gen. et spec. nov., holotype, but 36 of allotype. 28, habitus, lateral aspect; 29, antenna; 30, hind leg; 31, apex of hind tibia, outer aspect; 32, temple, latero-posterior aspect; 33, detail of nervulus; 34, inner fore claw; 35, outer hind claw; 36, apex of antenna of ♂ 28—30: scale-line; 31, 34—36: 5.0 × scale-line; 32, 33: 2.0 × scale-line.



Figs. 37—45, *Distilirella curvifervosa* gen. et spec. nov., holotype, but sp. nov., detail of nervellus; 39, propodeum and 1st metasomal tergite, dorsal aspect; 40, head, frontal aspect; 41, inner middle claw; 42, inner fore claw; 43, mesonotum, dorsal aspect; 44, head, dorsal aspect; 45, detail of basella and metacarpella. 37: scale-line; 38—40, 43—45: 2.0 × scale-line; 41, 42: 5.0 × scale-line.